Significant Factors Influencing the Decision to Adopt a MobileCommerce Application by a Group of Sellers in China

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Abstract: Electronic commerce offered the possibility to reach new markets at a relatively low cost, in a convenient way for both buyers and sellers, generating increased revenues since its origin until nowadays. However, social changes and technological innovations are making more attractive and convenient to switch from electronic commerce to mobile commerce. Then, the relevant research question in need of an answer is how to attract more users to m-commerce applications. This research proposes to determine significant factors influencing the intention to adopt a new mobile commerce application by a group of sellers in Nanjing, China, using a formative Structural Equation Model. The model uses a set of 11 indicators to build the final construct. These indicators are: group age, gender, perceived benefits, innovativeness, perceived security, perceived ease of use, perceived cost, perceived enjoyment, perceived compatibility, perceived lack of critical mass or perceived subjective norm and perceived intention to adopt mobile commerce. Results from this study identified perceived benefits, perceived enjoyment and innovativeness as significantly influencing the intention to adopt a new mobile commerce application by sellers. These results are similar to previous results forstudies about the intention to adopt mobile commerce by sellers. However, they are different from results for studies about the intention to adopt mobile commerce by buyers. This indicates that significant factors affecting the intention to adopt m-commerce apps are dependent on the type of decision maker. An additional contribution of this research to this area is that the explanatory power of the model presented in this research improves those from previous studies which increases the confidence in the results obtained from the analysis conducted here. However, results presented here still need to be considered with moderation due to the value of the coefficient of determination R^2 and the sample size. Further studies are needed with larger sample sizes to corroborate the results presented in this research to guide the activities of mobile commerce application developers and marketers in their efforts to attract more users to m-commerce applications.

Keywords: Mobile commerce, formative model, technology acceptance model, intention to adopt, structural equation model.

1. Introduction

Revenues from electronic commerce have been increasingly growing over the years after its origin in the mid-'90s (Laudon & Laudon, 2017).E-commerce offered the possibility to reach new markets at a relatively low cost and in a convenient way for both buyers and sellers. However, social changes and technological innovations are making more attractive and convenient to switch from electronic commerce to mobile commerce.Advances in mobile devices and telecommunication networks are making it very easy and affordable to have access to smartphones with data plans that allow consumers toconnect to the internet to realize a variety of activities such as search for products, complete bank transactions, pay for services, send and receive emails, post photos and chat in real time. Then, sellers and service providers needed to adapt to this new situation by designing applications with increased functionality and performance when accessed using mobile devices. Currently, in places like India, it is being considered to move directly to m-commerce avoiding e-commerce due to the limited access to desktop and laptop computers and the affordability of smartphones(Chakraborty & Sengupta, 2014)(Samanta & Banerjee, 2016). M-commerce has opportunities to achieve greater success than e-commerce since it can overcome some of the limitations of e-commerce such as accessibility (Chong, Chan, & Ooi, 2012). Social changes are making consumers demand more from m-commerce applications so that they fit almost seamlessly with their social lifestyle. Then, the affordability of smartphones and increased coverage of cellular networks fit the needsof these consumers with increased needs to be socially connected with friends and peers all the time. Then, m-commerce involves more than using mobile devices for buying and selling goods, service, and entertainment (Liébana-Cabanillas, Marinković, & Kalinić, 2017). It also implies the creation of a platform where users could interact at various levels sharing experiences about products and life in general (Cedeno E. B., 2018a). Sellers are also fully aware of the potential benefits that could result from free advertising from customers using social media. Then, the relevant question in need of an answer is how to attract moreusers to m-commerce applications. This research studies the intention to adopt a new m-commerce

application by means of a formative Structural Equation Model (SEM) using a set of 11 indicators. These indicators are: age group, gender, perceived benefits, innovativeness, perceived security, perceived ease of use, perceived cost, perceived enjoyment, perceived compatibility, perceived lack of critical mass or perceived subjective norm and perceived intention to adopt mobile commerce (Chong, Chan, & Ooi, 2012)(Liébana-Cabanillas, Marinković, & Kalinić, 2017)(Cedeno E. B., 2018a). The research presented in this paper extends the work presented in (Cedeno E. B., 2018b) by adding twoadditional indicators to the initial set of 9 indicators to determine which ones are significantly influencing the intention to adopt a new m-commerce application. Therefore, this study contributes to the area of mobile commerce by determining significant factors influencing the intention to adopt a new m-commerce application by a group of sellers in Nanjing, China.

Interest in the m-commerce sector in developing countries has been growing in recent years (Chong, Chan, & Ooi, 2012)(Leea & Wong, 2016). There is an increasing interest in the study of mobile commerce adoption in differentcountries such as Bangladesh(Rahman, 2015), China(Chong, Chan, & Ooi, 2012)(Dai & Palvia, 2009)(Lu, Yu, Liu, & Wei, 2017), India(Ahujaa & Khazanchib, 2016)(Chakraborty & Sengupta, 2014), Iran(Ghobakhloo & Tang, 2013), Malaysia (Chong, Chan, & Ooi, 2012)(Leea & Wong, 2016), Spain (Bigné, Ruiz, & Sanz, 2007)and the U.S. (Hillman & Neustaedter, 2017)(Dai & Palvia, 2009)(Lu, Yu, Liu, & Wei, 2017). In China alone, the use of mobile phones has tripled since the year 2005 (China, 2016). This represents a very desirable market for any new entrant in the m-commerce sector. Then it is important to determine relevant factors that could promote the adoption of mobile commerce applications (Liébana-Cabanillas, Marinković, & Kalinić, 2017). This research proposes a formative model to determine significant factors influencing the intention to adopt a new m-commerce application by sellers in Nanjing, China. In formative models, the final construct is built from a set of indicators representing different dimensions of the construct. Therefore, indicators in a formative model are not interchangeable as is the case with reflectivemodels(Dijkstra & Henseler, 2005)(Garson, 2016). Reflective models use a series of indicators to represent the same dimension of the construct. Then, reflective models are characterized by a set of highly correlated items. These aspects allow the use of traditional reliability and goodness of fit techniques to determine the quality of the model (Garson, 2016). However, this is not the case with formative models in which there is still ample controversy about how to determine the reliability and quality of the model (Garson, 2016)(Wong, 2013). For instance, traditional reliability indicators such as Cronbach Alpha (Garson, 2016)(Dijkstra & Henseler, 2005)may not be appropriate to use in formative models, despite its use in similar studies (Chong, Chan, & Ooi, 2012)(Dai & Palvia, 2009)(Ahujaa & Khazanchib, 2016)in which there are multiple items measuring the same indicator. Highly correlated items in a formative model are likely to be indicators of the same dimension of the construct. Then, in formative models, it is important to check for collinearity using Variance Inflation Factors(VIF). Collinearity measures the degree of correlation among indicators. In the study presented here to facilitate the application of the survey, there are no duplicate items measuring the same indicator, therefore it is expected correlation among indicators not to be high. Indicators in a well-defined formative model are likely to be unrelated to each other (Garson, 2016). This has important implications to determine significant factors influencing the adoption of the final construct since there are no duplicate items. In reflective models, it is easy to drop non-significant indicators since there are multiple manifestations of the same dimension of the construct. However, in formative models, indicators cannot be dropped from the modelswithout affecting the meaning of the final construct (Garson, 2016). In this paper, the Structural Equation Model (SEM) variance based Partial Least Squares (PLS) technique (Lee & Lin, 2013)(Garson, 2016)(Wong, 2013)(Starkweather, 2012) is used to determine significant factors affecting the intention to adopt this new m-commerce app.

Research presented in this paper and in(Cedeno E. B., 2018a) (Cedeno E. B., 2018b) (Cedeno E. B., 2018c) differ from previous studies(Chong, Chan, & Ooi, 2012)(Dai & Palvia, 2009)(Bigné, Ruiz, & Sanz, 2007)(Hillman & Neustaedter, 2017)(Leea & Wong, 2016)(Mallat & Tuunainen, 2008)(Lu, Yu, Liu, & Wei, 2017) since the intention to adopt mobile commerce is based on a real existing application which is seeking to increase market share capturing new markets in China. The new mobile commerce application studied in this paper is developed by "JiuYaoPintuan" (91拼团). This m-commerce application is used in Beijing to some extent but it is relatively unknown in the Nanjing market. M-commerce market in China is dominated by big players such as Taobao and Pinduoduo. One of the most popular platforms for m-commerce is WeChat which can be used for social media marketing or directly to buy products and services. Then, any newcomer in the Chinese m-commerce market has to offer more than the incumbents. Then, when respondents answered the survey used in this paper, they are rating the new m-commerce application against the popular incumbents. New m-commerce appuses a novel concept of group buying in which unrelated buyers put together orders for the same product benefiting on the economies of scale that produce buying a larger quantity of the same product. As indicated by(Lee & Lin, 2013) mobile commerce applications that promote group buying present issues of trust and security. Organizers of group buying may not be known by all members of the group. Group members only share a common interest in buying the same product at a cheaper price. Reference(Lee & Lin, 2013) proposes a

method to increase the security of group buying transactions based on the logic of mutual authentication. The mobile commerce application studied in this paper adds additional features that increase the security of the group buying transactions by not releasing the financial incentive to the group organizer until all participants in the group have received their complete orders. The application offers the possibility to organize parties for wine or coffee tasting. Participants will enjoy pricediscounts resulting from buying large quantities as a group (of unrelated buyers), while sellers will benefit from high sales during a short period of time. M-commerce application also offers the possibility to broadcast live feeds that customers can use to buy products.

The present study extends the work in(Cedeno E. B., 2018a) by adding two additional indicators to the set of 9 indicators used to build the final construct intention to adopt this new m-commerce application by using a formative SEM-PLS model. It is found that perceived benefits, innovativeness and perceived enjoyment are significant factors influencing the adoption of a new mobile commerce application by sellers(Cedeno E. B., 2018).The present study extends the research performed in (Cedeno E. B., 2018c) by studying the group of sellers alone. This facilitates the study of collinearity issues that were found there (Cedeno E. B., 2018c). The objective of (Cedeno E. B., 2018c) is to develop a model to determine significant factors influencing the intention to adopt a new mobile commerce application in Nanjing, China, by a group of sellers and buyers. A formative structural equation model (SEM) is developed to assess the intention to adopt this new m-commerce application by a group of 98 sellers and buyers. A set of 12 indicators are used to build the final construct intention to adopt this new m-commerce application. Variance Inflation Factors (VIF) indicate problems (Cedeno E. B., 2018c) with collinearity. Collinearity is considered to happen when the VIF exceeds a value of 5 (Garson, 2016). Collinearity has not been a problem when buyers and sellers have been analyzed separately in previous research (Cedeno E. B., 2018a)(Cedeno E. B., 2018b). This is also the case with the results presented in this paper in which the same group of sellers is analyzed by itself. Therefore, results suggest that since the inclusion of buyers and sellers creates issues with collinearity separate research studies are needed to determine significant factors affecting the intention to adopt m-commerce applications by each group. The study presented here differs from (Cedeno E. B., 2018b) since the focus of is only on the buyers whereas the focus of the present research is on the sellers. Reference (Cedeno E. B., 2018b) presents a formative model to determine the intention to adopt a mobile commerce application in China based on a set of 13 indicators. It is found that Education level and Perceived Lack of Critical Mass or Perceived Subjective Norm are significant factors determining the intention to adopt a new m-commerce application by buyers. These results are similar to previously available results for buyers in China but are different from those indicating the intention to adopt the same m-commerce application but by sellers (Cedeno E. B., 2018a). Previous results published in 2012 for a similar study in China indicated that trust, social influence, and cost have a significant relationship with the decision to adopt mobile commerce by consumers (Chong, Chan, & Ooi, 2012). Earlier results published in 2009 (Dai & Palvia, 2009) identified perceived usefulness, perceived ease of use, perceived cost and subjective norm as significant factors influencing the decision to adopt mobile commerce by consumers. Comparison of these results indicates that significant factors influencing the decision to adopt m-commerce depend upon the nature of the decision maker as a seller or as a buyer. An additional contribution of this research to this area is thatexplanatory power of the model presented in this research improves those presented in (Cedeno E. B., 2018a) (Cedeno E. B., 2018b) (Cedeno E. B., 2018c) which increases the confidence on the results obtained from the analysis conducted here.

2. Materials and Methods

A survey questionnaire is used to gather information about a set of indicators to determine their significant influence over the final construct intention to adopt a new mobile commerce application. The survey questionnaire was designed in English using a Likert scale from 1 (disagree strongly) to 4 (agree strongly). Surveys were reviewed by a group of Chinese speakers of English as a second language to verify the facility to understand the questions. Then, surveys were translated and applied to potential sellers in Chinese. Sellers are given a brief introduction about the new m-commerce application and the objective of the survey questionnaire. Convenience sampling is used to distribute the surveys in a similar way as in several other studies(Chong, Chan, & Ooi, 2012)(Dai & Palvia, 2009)(Ahujaa & Khazanchib, 2016). This limitationcan be overcome easily with additional financial resources to conduct the study using a random sample.

A total of 49 surveys were collected. The Structural Equation Model (SEM) variance based Partial Least Squares (PLS) technique used to analyze the data in this paper has the advantage of being able to handle small sample sizes(Garson, 2016). There are 26 females and 23 males in the sample. The proportion of female sellers in the sample is 53%. Sellers younger than 30 years old represent 63% of the sample; whereas sellers between 31 and 50 represent the other 35%, sellers older than 50 years represent the remainder 2%.Similarly, with previous studies (Cedeno E. B., 2018a)(Cedeno E. B., 2018b), the sample is skewed towards females and younger respondents. This could signal some investigator biased (Sharpe & De Veaux, 2013)since the majority

of students collecting data are young females enrolled in the Business Program at the School of Management, New York Institute of Technology, Nanjing, China. There is no available data about the composition of the population of interest for the m-commerce app studied here to determine whether or not the sample is representative of their target market. In this sense, the results presented here are sample based and share the limitations of this type of studies in terms of extending the results to larger samples in the general population.

Figure 1 presents the formative model used in this research to determine the significant factors influencing the intention to adopt a new m-commerce application in Nanjing, China. The technique Structural Equation Model Partial Least Squares (SEM-PLS) (Lee & Lin, 2013)(Garson, 2016)(Wong, 2013)(Starkweather, 2012)is used to analyze the model. Similarly, with most of the studies on mobile commerce adoption, the study presented in this research is based on the Technology Acceptance Model (TAM)(Andreev, Tsipi, Hanan, & Nava, 2009). The survey used in this research consists of the items described below (Chong, Chan, & Ooi, 2012)(Dai & Palvia, 2009)(Ahujaa & Khazanchib, 2016)(Liébana-Cabanillas, Marinković, & Kalinić, 2017)(Davis, 1989)(Mallat & Tuunainen, 2008)(Cedeno E. B., 2018a)(Cedeno E. B., 2018b)(Cedeno E. B., 2018c)in addition to age group and gender:

Perceived Benefits (Q1): Sellers are likely to use the new m-commerce app if they perceive it would bring them exposure to bigger markets giving them the possibility to increase their sales.

Innovativeness (Q2): In the Chinese m-commerce sector there are already some big players such as Taobao andPinduoduo, then sellers would only switch to a new m-commerce application if they perceive this application offers a great deal of innovation in the way to reach customers in different and new markets.

Perceived security (Q3): sellers expect that mobile commerce transactions provide the same or greater security than electronic commerce transactions. M-commerce transactions need to be secure preserving the privacy of the sellers and consumers and their transactions.

Perceived Ease of Use (Q4): Sellers would be reluctant to adopt an m-commerce app that is too complex to use since potential buyers will not use it. M-commerce apps need to allow buyers and sellers to perform transactions in a fast and easy way. Spending too much time searching for products or completing the sale carries additional costs to consumers (i.e. consumers are using more megabytes of their data plan to complete transactions).

Perceived Cost (Q5): Transaction costs, maintenance costs and any other costs associated to use an m-commerce platform have to be kept to a minimum. Potential sellers are willing to assume these costs initially if, in the long run, the benefits are more. Sellers would be more likely to switch to a new m-commerce app that offers no costs for them and their clients.

Perceived Enjoyment (Q6): M-commerce has to offer consumers a pleasant and gratifying buying experience. Sellers would be more likely to adopt a new m-commerce app if they perceived customers would use the app not for mere shopping but as an enjoyable activity providing more or similar gratification to the experience of shopping at the store. Sellers are aware that this positive shopping experience can bring them more customers after receiving positive feedback online.

Perceived Compatibility (Q7): M-commerce apps to stay in the market need to keep up with constant technological changes. Sellers need to be reassured that any new m-commerce application will have the technical support and infrastructure to keep up or even stay ahead of such changes and trends.
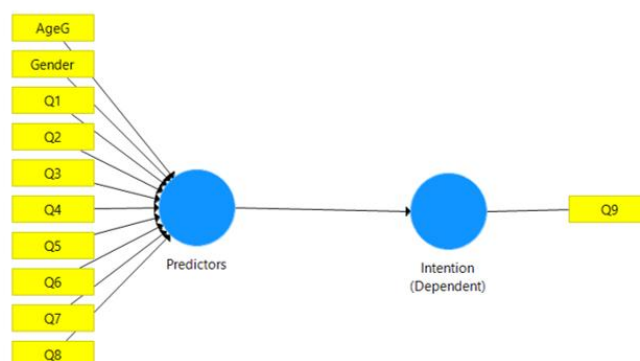

Figure 1. Formative Model

Perceived Lack of Critical Mass or Perceived Subjective Norm (Q8): Sellers understand that m-commerce is an activity that involves more than buying and selling products. In an era characterized by social networks, sellers do not want to be stuck with a mobile platform that is not a trendsetting platform and that it has become obsolete. This is perhaps one of the most difficult aspects to overcome by a newcomer unknown by

potential buyers and sellers. This newcomer would have to generate some critical mass even before entering the market to have the possibility to attract more customers.

Perceived Intention to adopt m-commerce due to overall advantages (Q9): Intention to adopt the new mobile platform is estimated as a proxy via this question(Dai & Palvia, 2009).

3. Results

Significant indicators for the formative model presented in Fig. 1 are determined using the program SmartPLS 3 (Ringle, Wende, & Becker, 2015). The analysis presented here uses a variance-based SEM-PLS technique which offers advantages over other covariance-based SEM techniquesin the ability to handle small samples and requiring fewer assumptions about the distribution of the data. Consistent Partial Least Squares (PLSc) is used to evaluate the significant relationship between the indicators and the final construct "Intention" (Q9) (Dijkstra & Henseler, 2005). PLSctechnique offers advantages over Partial Least Squares (PLS)(Dijkstra & Henseler, 2005)due to the fact that it produces asymptotically consistent estimators and it gives the theoretical possibility of derived goodness of fit estimators. Determining quality, reliability,and goodness of fit indicators for formative models like the one presented in this study is still controversial(Garson, 2016)(Starkweather, 2012).

Results presented in Fig 2indicate that 41.3% of the target endogenous variable "Intention" variance is explained by the predictors used in the model. According to (Garson, 2016)coefficient of determination values,R^2greater than 0.67 is considered substantial, values between 0.33 and 0.66 are considered moderate and values between 0.19 and 0.33 are considered week. Then, the research presented here has moderate explanatory power. Models developed in (Dai & Palvia, 2009)(Cedeno E. B., 2018b)for China present a higher explanatory power. However, (Dai & Palvia, 2009), use a larger sample size with multiple items for the same indicatorand (Cedeno E. B., 2018b) uses a larger sample of buyers. The explanatory power of the model presented in this research improves these presented in(Cedeno E. B., 2018a) (Cedeno E. B., 2018b) (Cedeno E. B., 2018c).

Consistent PLSc Bootstrapping(Ringle, Wende, & Becker, 2015) is used to determine the statistical significance of inner model path coefficients and outer model weights. Outer model weights are considered an estimator of the relevant contribution of an indicator to build the final construct. Parameter estimation using the bootstrapping technique is done by drawing a large number of random subsamples with replacement from the original sample used in the study.Therefore, this technique could produce results with small variations each time the algorithm is run for the same problem(Garson, 2016). Then when Consistent PLSc Bootstrapping technique is employed parameters are estimated using the PLSc procedure. Consistent PLSc Bootstrapping algorithm for the study presented here uses 500 random samples considering individual sign changes, basic bootstrapping and Bias-Corrected and Accelerated (BCa) Bootstrap to determine the confidence intervals. Significant factors for values presented in Fig. 3 are those whose t-statistic is larger than 1.96 considering a significant level of 5% in a two-tailed test. Therefore, the inner model path coefficient linking the predictors with the intention to adopt m-commerce is significant. Similarly, perceived enjoyment (Q6) is significant. The corresponding p-value for Q6 considering outer weight is 0.020.Perceived Benefits (Q1) is significant at the 10% level since the p-value is 0.069. P-values for all other indicators considering outer weights range from 0.286 to 0.920.

In a reflective model since there is redundancy among the indicators, indicators can be dropped without affecting the meaning of the final construct (Wong, 2013). However, this is not the case with formative models since all indicators help to build the construct (Garson, 2016). Reference (Wong, 2013) indicates that before dropping not significant indicators in a formative model based solely on Outer Model Weights Significance it is important to check Outer Loadings significance before removing the indicator. According to p-values for outer loadings the following indicators are significant at the 5% level: Perceived Benefits (Q1, p-value = 0.000), Innovativeness (Q2, p-value = 0.006), Perceived Enjoyment (Q6, p-value = 0.000). According to this criterion, only indicators that have no significant Outer Model Weights and Outer Loadings should be removed from the model. Then, significant factors included in the final model are Perceived Benefits (Q1), Innovativeness (Q2) and Perceived Enjoyment (Q6).
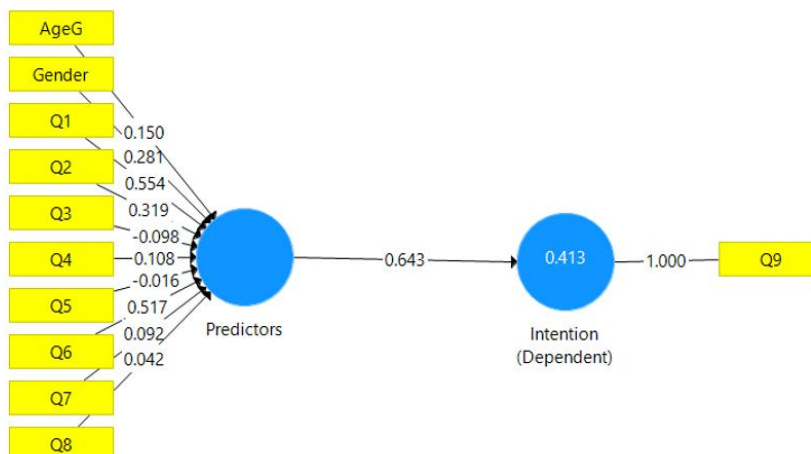
Figure 2 Outer Model Weights, inner model path coefficient, and R^2 values

Convergent validity and collinearity are used to describe the quality and reliability of the relationships in the model. However, determining convergent validity remains a controversial issue in formative models(Dijkstra & Henseler, 2005)since convergent validity tests the degree of correlation among indicators. Indicators in well-defined formative models are likely to be uncorrelated, presenting no collinearity. As a result, in some formative models, researchers have decided not to report any values for convergent validity. Alternative methods to determine convergent validity are presented in (Wong, 2013)(Dijkstra & Henseler, 2005)(Andreev, Tsipi, Hanan, & Nava, 2009)using redundancyanalysis. Nonetheless, despite the used of these methods the problem of determining acceptable values for convergent validity still remains unsettled.
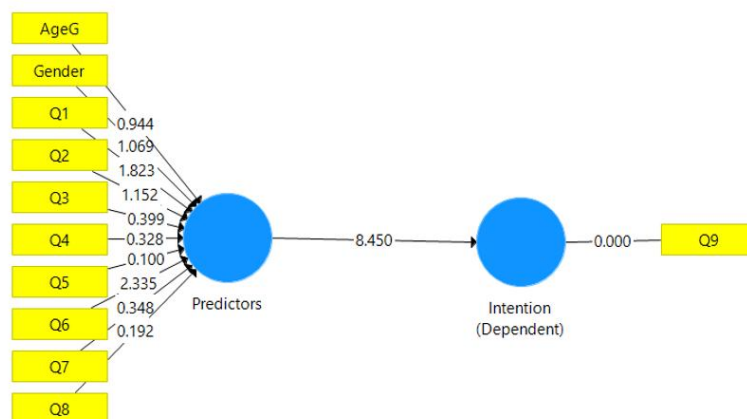

Figure 3. Inner Model and Outer Model Weights Significance

Since indicators in formative models are considered different dimensions of the construct, it this expected that indicators are not highly correlated with each other. Therefore, problems of collinearity should not arise. Collinearity is considered to happen when the variance inflation factor (VIF) exceedsa value of 5 and tolerance values are greater than 0.2 (Garson, 2016). These two measurements are considered to provide the same information(Garson, 2016). Tolerance can be obtained by subtracting 1 from R^2. In the present case tolerance equals (1- 0.413) = 0.587. Tolerance values less than 0.20 signal issues with multicollinearity. In cases when the coefficient of determination is greater than 0.8, collinearity must be evaluated. VIF values for all indicators used in this research are less than the cutoff value of 5 as presented in Table 1. Corresponding Inner VIF from predictors to Intention corresponds to 1. Then, collinearity is not present in the proposed model.

Table 1. Variance Inflation Factor (VIF)

	VIF		**VIF**
Age Group	1.069	Q4	2.353
Gender	1.544	Q5	1.611
Q1	1.524	Q6	1.508
Q2	1.614	Q7	1.700
Q3	1.868	Q8	1.653

4. Discussion

Revenues from electronic commerce have been increasingly growing over the years after its origin in the mid-'90s(Laudon & Laudon, 2017). E-commerce offered the possibility to reach new markets at a relatively low cost and in a convenient way for both buyers and sellers. However, social changes and technological innovations are making much attractive and convenient to switch from electronic commerce to mobile commerce. Then, it becomes a very relevant issue to determine significant factors influencing the decision to adopt mobile commerce applications. This research presents a formative model to determine significant factors influencing the intention to adopt a new m-commerce application. This model includes the following 11 indicators: Perceived Benefits, Innovativeness, Perceived security, Perceived Ease of Use, Perceived Cost, Perceived Enjoyment, Perceived Compatibility, Perceived Lack of Critical Mass or Perceived Subjective Norm, gender and age group. The present study extends the research performed in (Cedeno E. B., 2018c) by studying the group of sellers alone. This facilitates the study of collinearity issues that were found there (Cedeno E. B., 2018c). The objective of (Cedeno E. B., 2018c) is to develop a model to determine significant factors influencing the intention to adopt a new mobile commerce application in Nanjing, China, by a group of sellers and buyers. In the initial model presented in (Cedeno E. B., 2018c) the following indicators have problems with collinearity: Perceived security, Perceived Ease of Use, Perceived Compatibility and Perceived Lack of Critical Mass or Perceived Subjective Norm. Collinearity has not been a problem when buyers and sellers have been analyzed separately in previous research (Cedeno E. B., 2018a)(Cedeno E. B., 2018b). This is also the case with the results presented in this paper in which the same group of sellers analyzed (Cedeno E. B., 2018c)is studied by itself. It is found using a modified research model in (Cedeno E. B., 2018c) that Age, Perceived Benefits, Innovativeness, and Perceived Enjoyment are significant factors influencing the adoption of a new mobile commerce application for the sample of buyers and sellers studied in Nanjing, China. According to the analysis presented in the previous section significant factors included in the final model to determine the adoption of m-commerce by a group of sellers are Perceived Benefits, Innovativeness, and Perceived Enjoyment. These results are consistent with the results presented in (Cedeno E. B., 2018c). The only difference is that age is not a factor in the present study. Then, from the analysis presented here and comparison with previous results inclusion of the two groups (buyers and sellers) creates problems with collinearity. Results presented here are consistent with results presented in (Cedeno E. B., 2018a) to determine the intention to adopt this new m-commerce application by sellers. An additional contribution of this research to the area of m-commerce is that explanatory power of the model presented in this research improves those presented in (Cedeno E. B., 2018a) (Cedeno E. B., 2018b) (Cedeno E. B., 2018c) which increases the confidence on the results obtained from the analysis conducted here.

Previous results published in 2012 for a similar study in China indicated that trust, social influence, and cost have a significant relationship with the decision to adopt mobile commerce by consumers (Chong, Chan, & Ooi, 2012). Earlier results published in 2009 (Dai & Palvia, 2009) identified perceived usefulness, perceived ease of use, perceived cost and subjective norm as significant factors influencing the decision to adopt mobile commerce by consumers. These results are similar to those presented in (Cedeno E. B., 2018b)where a formative model is used to determine the intention to adopt a mobile commerce application by buyers in China based on a set of 13 indicators. It isfound that Education level and Perceived Lack of Critical Mass or Perceived Subjective Norm are significant factors determining the intention to adopt a new m-commerce application by buyers.Education level is not one of the factors considered in this research.These results for a group of buyers contrast the results obtained in the present research for a group of sellers in which the following factors are considered to be affecting significantly the decision to adopt m-commerce apps: Perceived Benefits, Innovativeness, and Perceived Enjoyment. Comparison of all the results presented above is supporting the idea that significant factors influencing the intention to adopt m-commerce applications are dependent on the nature of the decision maker. However, these results have to be considered with moderation due to the value of the coefficient of determination R^2 and the sample size. Further studies are needed with larger sample sizes to

corroborate the results presented in this research to guide the activities of mobile commerce application developers and marketers in their efforts to attract more users to m-commerce applications.

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